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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,227	11/01/2005	Karla S. Colle	2003UR028	4245

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EXAMINER

KUGEL, TIMOTHY J

ART UNIT	PAPER NUMBER
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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/555,227	Applicant(s) COLLE ET AL.	
	Examiner Timothy J. Kugel	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) 2,7 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/1/2005 & 03/12/2007</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Claims 1-25 are pending as filed on 1 November 2005.

Information Disclosure Statement

2. The information disclosure statements submitted on 1 November 2005 and 12 March 2007 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statements.

It is noted that applicant has submitted two information disclosure statements citing 15 references covering 162 pages of text.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claims 2 and 19 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form.

Claim 2 recites the limitation "wherein the polymer is a blend of a high-molecular weight component and a low-molecular weight component." However, claim 1, from

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which claim 2 depends, recites a Markush-type list of bimodal molecular weight distribution polymers—see item 6 below—none of which match that of claim 2, the closest of which is "a polymer is a blend of a high-molecular weight component and a low-molecular weight component **of the same polymer**" (emphasis added), which is instantly represented as claim 3.

Claim 19 recites the limitation "wherein said polymer exhibits only a single minimum point between only two peaks on said molecular weight distribution curve." However, claim 18, from which claim 19 depends, limits the molecular weight distribution curve to "**two or more minimum points** between **three or more peaks**" (emphasis added).

5. Claim 7 is objected to because of the following informalities: the Markush-type list of carrier solvents recites "...ethanol, propanol, isopropanol, glycol..." and should recite "...ethanol, n-propanol, isopropanol, glycol..." Appropriate correction is required.

Claim Interpretation

6. Claims 1, 13, 16, 21, 23, 24 and 25 use the transitional terms 'includes' and 'contains', which have been construed as being synonymous with 'comprising', which is inclusive or open-ended and does not exclude additional, unrecited elements or method steps.

Further, claim 1 recites a list of potential of bimodal molecular weight distribution polymers in non-traditional Markush language. While the language used is properly

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written in the exclusive, the examiner wishes to make it clear the claim has been construed to recite, "...wherein the inhibitor comprises a substantially water-soluble polymer having a bimodal molecular weight distribution wherein the water-soluble polymer is selected from the group consisting of a blend of a high-molecular weight component and a low-molecular weight component of the same polymer, a maleimide polymer, a polymer formed from an ester of N-acyldehydroalanine, a polymer formed from an amide of N-acyldehydroalanine, a polymer polymerized as a bimodal molecular weight distribution polymer and combinations thereof."

Further still, claim 25 recites a list of potential of bimodal molecular weight distribution polymers in non-traditional Markush language. While the language used is properly written in the exclusive, the examiner wishes to make it clear the claim has been construed to recite, "...an effective amount of a polymer blend of a low-molecular weight polymer component and a high-molecular weight component wherein the polymer blend is selected from the group consisting of a maleimide polymer, a polymer formed from an ester of N-acyldehydroalanine and a polymer formed from an amide of N-acyldehydroalanine, wherein the blend has a bimodal..."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 USC 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1-10 and 18-23 are rejected under 35 USC 102(b) as being anticipated by US Patent 4,072,607 (Schiller hereinafter).

Schiller teaches a treating a petroleum oil field fluid to inhibit scale or precipitate (Column 1 Lines 7-13 and Column 2 Lines 3-6) with an aqueous composition prepared from an acrylamide containing polymer having a bi- or poly-modal molecular weight distribution wherein at least 60% of the polymer has a molecular weight of about 500 to about 2000 and at least about 10% of the polymer has a molecular weight of about 4000 to about 12000 (Column 2 Lines 25-63, Figure 1 and Figure 2) and wherein the molecular weight distribution curve shows either at least two peaks with minimums between (Figure 1) or a single minimum point between about 4000 and about 7500 with two peaks on either side of the minimum point (Figure 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 USC 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 US 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 USC 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 11-17, 24 and 25 are rejected under 35 USC § 103(a) as being unpatentable over Schiller as applied to claims 1-10 and 18-23 above in view of US Patent 6,222,083 (Colle hereinafter).

Schiller teaches a treating a petroleum oil field fluid to inhibit scale or precipitate with an aqueous composition prepared from an acrylamide containing polymer having a bi- or poly-modal molecular weight distribution wherein at least 60% of the polymer has a molecular weight of about 500 to about 2000 and at least about 10% of the polymer has a molecular weight of about 4000 to about 12000 and wherein the molecular weight distribution curve shows either at least two peaks with minimums between or a single minimum point between about 4000 and about 7500 with two peaks on either side of the minimum point as detailed above.

Schiller does not disclose expressly the use of polymers comprising amides or esters of acyldehydroalanine, N-vinyl amide, N-allyl amide, maleimide, vinyl oxazoline, N-isopropyl methacrylamide or N-vinyl caprolactam.

Colle discloses a method of inhibiting hydrate formation in a petroleum fluid stream (Column 1 Lines 10-27 and Column 2 Lines 2-7) comprising the use of a aqueous polymer composition wherein the polymer may comprise acrylamide—as taught by Schiller—amides or esters of acyldehydroalanine, N-vinyl amide, N-allyl amide, maleimide, vinyl oxazoline, N-isopropyl methacrylamide or N-vinyl caprolactam (Column 2 Lines 24-33, Column 3 Lines 32-44 and Column 9 Lines 4-22).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to replace the acrylamide containing polymer of Schiller with the amide or ester of acyldehydroalanine, N-vinyl amide, N-allyl amide, maleimide, vinyl oxazoline, N-isopropyl methacrylamide or N-vinyl caprolactam comprising polymers of Colle. The rationale to do so would have been the motivation provided by the teaching of Colle that such are functional equivalents and would therefore predictably inhibit scale or precipitate in petroleum fluid streams.

9. Claims 1-25 are rejected under 35 USC § 103(a) as being unpatentable over Colle in view of Schiller.

Colle discloses a method of inhibiting hydrate formation in a petroleum fluid stream comprising the use of a aqueous polymer composition wherein the polymer may comprise acrylamide, amides or esters of acyldehydroalanine, N-vinyl amide, N-allyl amide, maleimide, vinyl oxazoline, N-isopropyl methacrylamide or N-vinyl caprolactam as detailed above.

Colle does not disclose expressly the polymer having a bi- or poly-modal molecular weight distribution as instantly claimed.

Schiller teaches a treating a petroleum oil field fluid to inhibit scale or precipitate with an aqueous composition prepared from an acrylamide containing polymer having a bimodal molecular weight distribution wherein at least 60% of the polymer has a molecular weight of about 500 to about 2000 and at least about 10% of the polymer has a molecular weight of about 4000 to about 12000 and wherein the molecular weight

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distribution curve shows either at least two peaks with minimums between or a single minimum point between about 4000 and about 7500 with two peaks on either side of the minimum point as detailed above.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to ensure the polymers of Colle where in the bi-, or poly-modal molecular weight distribution of Schiller. The rationale to do so would have been the motivation provided by the teaching of Schiller that the molecular weight distribution as such resulted in a synergistically better scale and precipitate inhibition (Schiller Column 3 Lines 3-7).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Kugel whose telephone number is (571) 272-1460. The examiner can normally be reached on 6:00 AM - 4:30 PM Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Timothy J. Kugel/
Patent Examiner, AU 1796